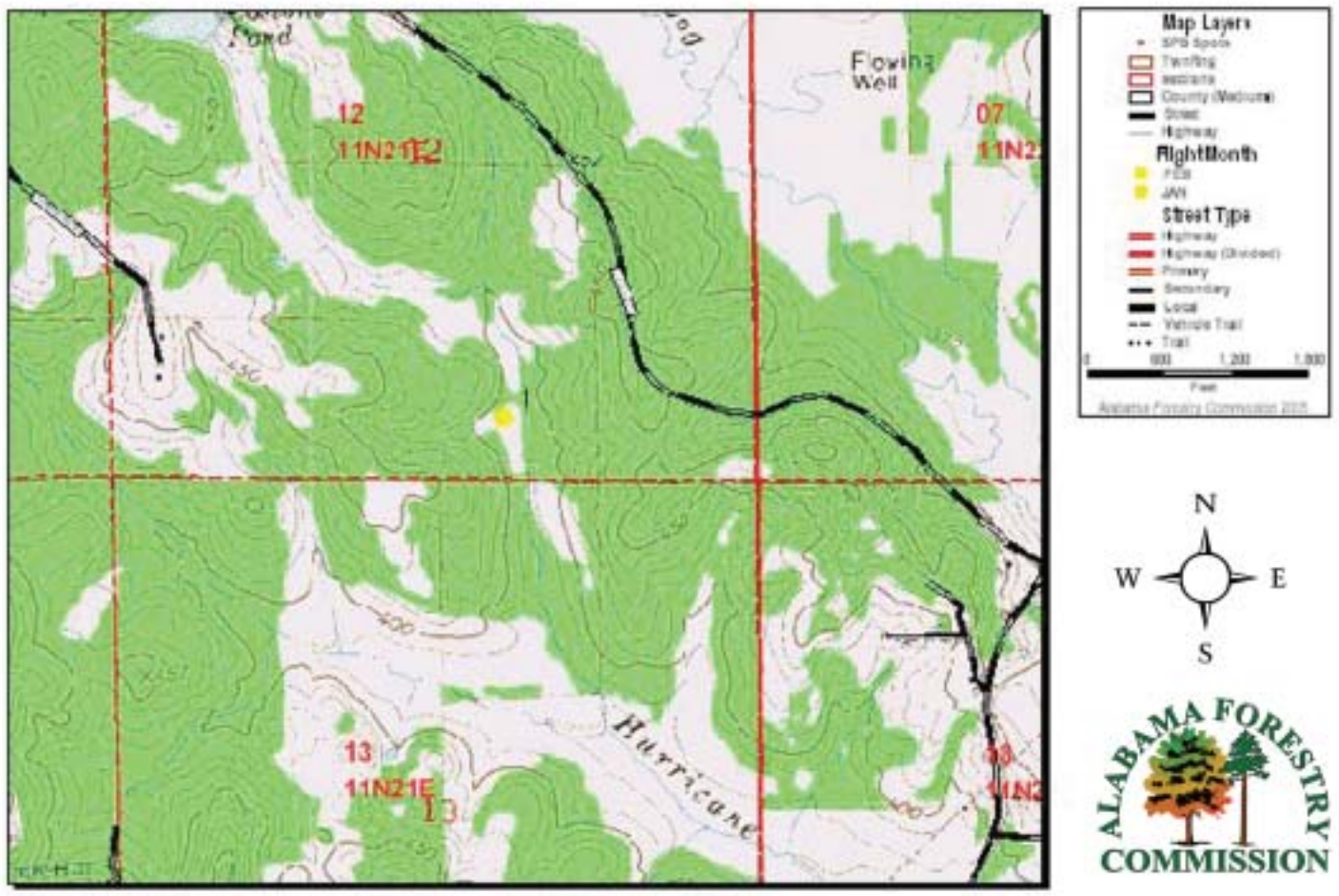



*Figure 1 - Topographic map showing SPB spots.*

# On The Cutting Edge of Technological Advancement

By *Dana McReynolds*, GIS Coordinator, Alabama Forestry Commission

In a world of never-ending change, all realms of technology continue to make momentous leaps and bounds towards progress. This definitely holds true for the advancements in Geographic Information Systems (GIS) technology. GIS is a relatively new science that has made tremendous progress since its development in the 1960's. This field of study is the combination of map making and computer software. It entails the entire science of manipulating, analyzing, and illustrating spatial data from layers of information.

Even though GIS has come a long way, it would not have had much success without the continuous progress in computer technology. Because of these improvements, GIS continues to evolve the process of map making into the efficient procedure used today. With several GIS programs available, selecting a high quality and effective program for map production and spatial analysis is much simpler.

The Alabama Forestry Commission (AFC) is also following the path of progress. Last year, the agency acquired a long-awaited and much-needed GIS program, but the process for obtaining it was deliberate and meticulous. A subcommitte at the Commission reviewed the mapping ability, cost effectiveness, and user complexity of several GIS programs to determine the best one for the agency.

After many discussions, the committee selected *Maptitude* as the GIS program for the AFC. *Maptitude* is a fully functional GIS program equipped with roads, streams, railroads, US census data, and other map features. This program can produce maps, charts, graphs, data views, and layouts by using a range of various file types. The geographic file type, unique to *Maptitude*, is the one generally used; however, this program can also read worksheets, shapefiles, images, and text. To make this mapping system complete for the agency's objectives, aerial photographs and topographic maps were purchased from an independent contractor.

The main purpose for purchasing *Maptitude* is to enable the Commission to produce professional looking maps for their valuable clients. All types of maps will be created, but the main ones needing a "makeover" were for the TREASURE Forest Plan of which several maps are required. A systematic routine was developed for producing maps depicting Forest Land Cover, the Southern Pine Beetle Hazard Rating, and the Annosus Root Rot Hazard Rating. A General Location map is also needed with this plan. Now, every county office has *Maptitude* and can produce these specialized and professional TREASURE Forest Plan maps for landowners *(Figure 2)*.

Another reason for purchasing a GIS program was to enable the Forestry Commission to produce Southern Pine Beetle (SPB) Infestation maps internally. Before *Maptitude*, the agency contracted with Alabama Power to print these maps, but the distinct capabilities of this program permit printing of SPB infestations

*(Continued on page 24)*

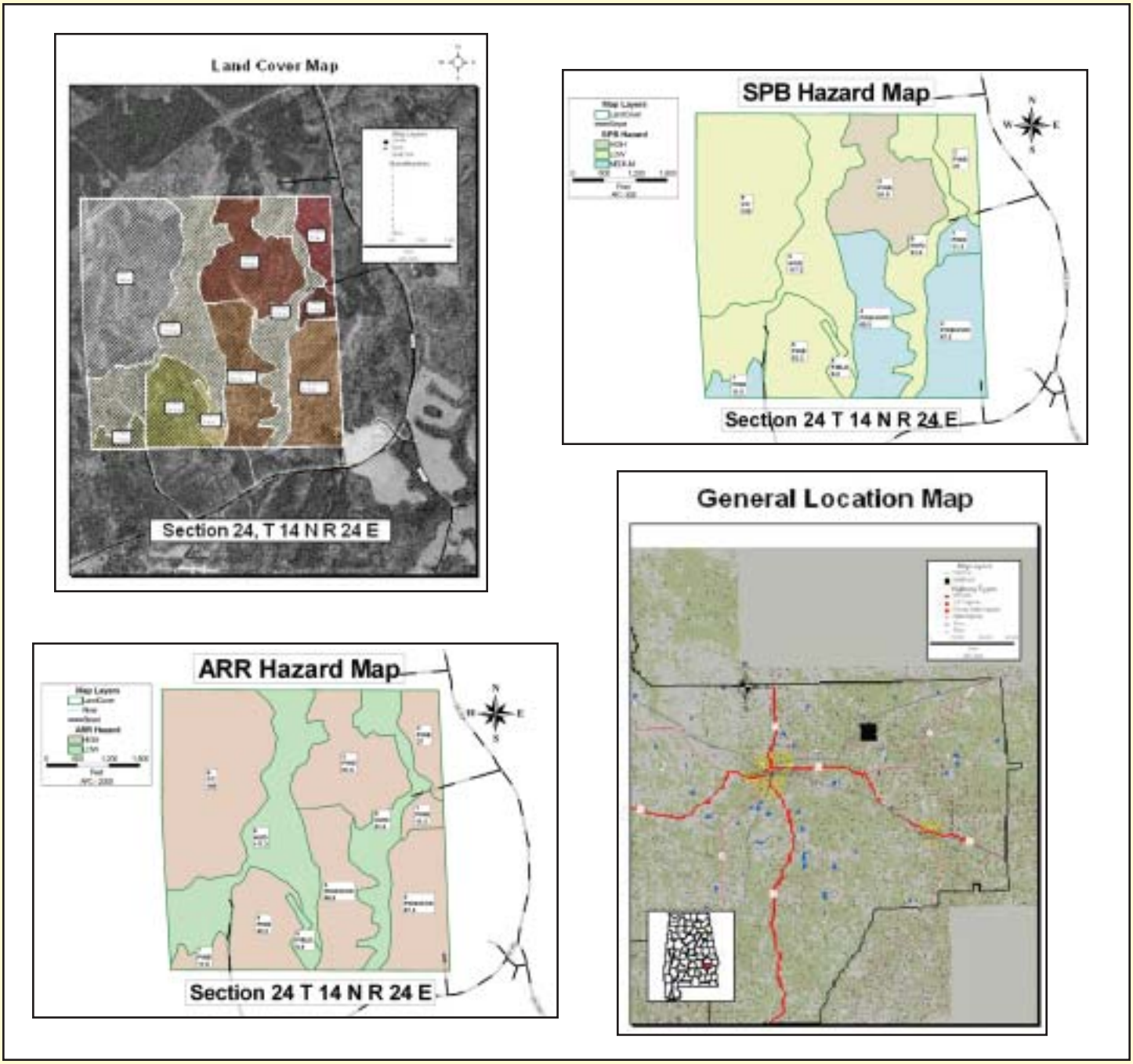
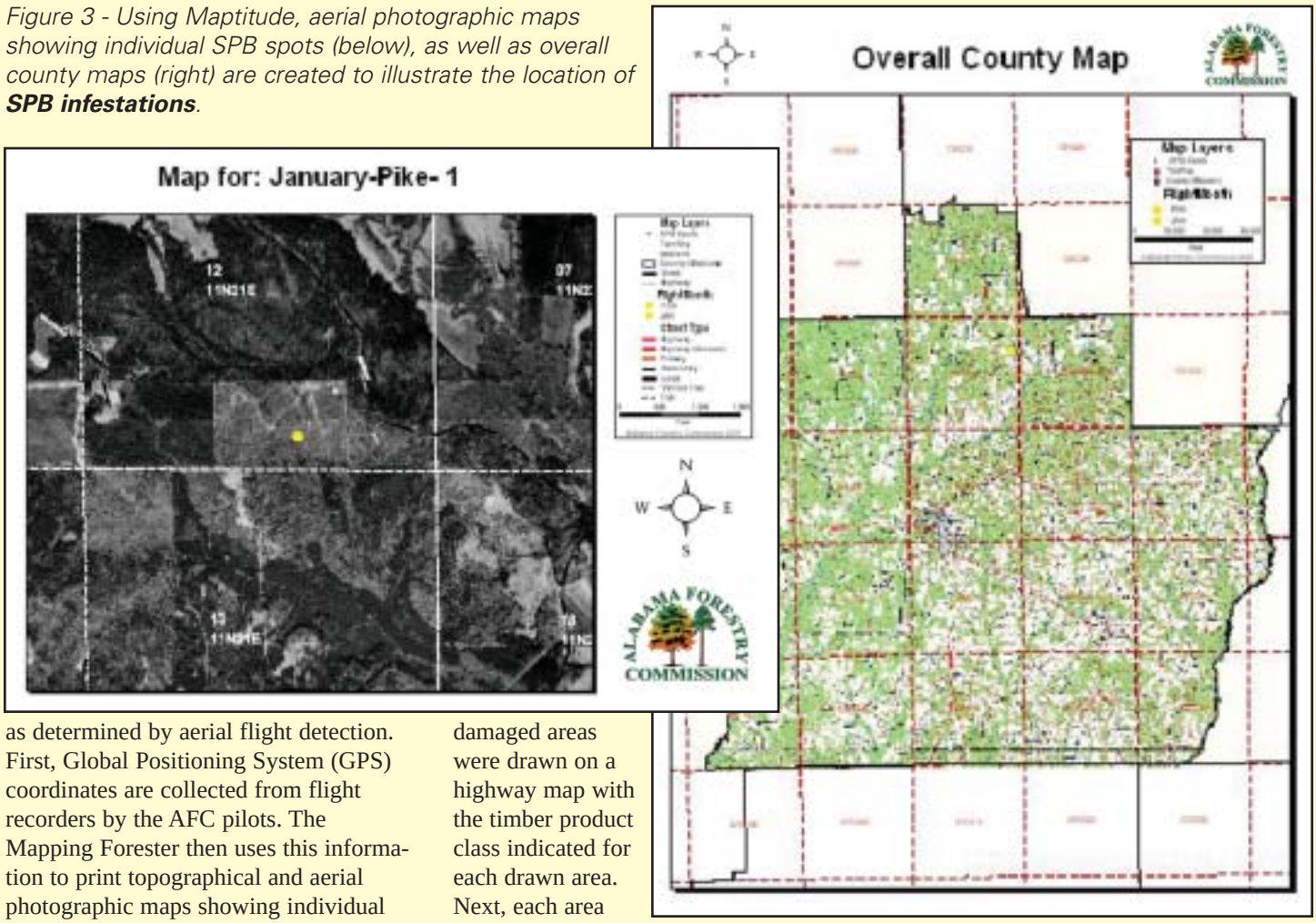



*Figure 2 - Maptitude software assists AFC county offices in printing the required maps when preparing* ***TREASURE Forest Plans*** *for landowners.*

*Figure 3 - Using Maptitude, aerial photographic maps showing individual SPB spots (below), as well as overall county maps (right) are created to illustrate the location of* ***SPB infestations****.*




as determined by aerial flight detection. First, Global Positioning System (GPS) coordinates are collected from flight recorders by the AFC pilots. The Mapping Forester then uses this information to print topographical and aerial photographic maps showing individual SPB spots. An overall county map is also printed to illustrate the location of the SPB infestation in that county *(Figures 1 and 3)*. All maps are mailed to the county office. Finally, the individual SPB maps are mailed to the landowners having these infestations on their property.

For special projects and reports, *Maptitude* provides better analysis and illustration of information. Using tabulated data, this program creates maps, charts, and graphs. For example, the extreme damage caused by Hurricane Ivan in September 2004 required immediate emergency response from the AFC. Every division of this agency actively participated in the relief efforts. The Management Division completed a survey and assessment of all timber damaged by the storm and summarized the conclusions in the Hurricane Ivan Timber Damage Report. Both the graphs for the analysis and the maps locating damaged areas were created using *Maptitude*. The operation began with Commission pilots and selected employees flying over the concentrated areas immediately impacted by the hurricane. Moderate and severely damaged areas were drawn on a highway map with the timber product class indicated for each drawn area. Next, each area was digitized into the GIS program and saved as a map. County maps illustrating these impacted areas were printed and used in local landowner meetings as well as in the final timber damage report. *(See Figure 4)*

The capabilities of *Maptitude* are countless, and the Commission has only tapped in on just a few of its possibilities. As the agency becomes more proficient with the mapping program, unlimited projects, analyses, and maps will be developed and used for special reports and presentations. As GIS technology continues to progress, so will the AFC continue to challenge and expand its technical knowledge. Implementing *Maptitude* into the work plan is proof of that. The Alabama Forestry Commission is definitely on the "cutting edge of technological advancement."

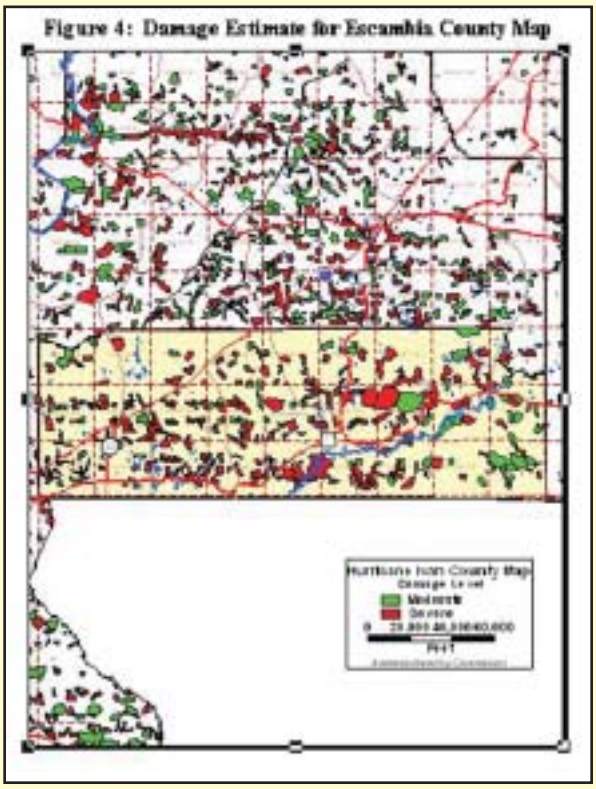



*Figure 4 - Following* ***Hurricane Ivan****, special maps such as this one were created using Maptitude to locate damaged areas.*